Mohsen Nourazar

www.nourazar.ir

CURRICULUM VITAE – 2019

PERSONAL INFORMATION

Date of birth	May 15, 1986
Citizenship	Iran
Lives in	Gent, Belgium
Married to	Samaneh Hashemikia

EDUCATION

Postdoc	**Postdoc Researcher in Parallel Computing** IMEC/University of Gent May 2019-Present. Supervisor: Professor Bart Goossens
Ph.D.	**Ph.D. in Electronics Engineering** University of Zanjan, February 2018. Super Advisor: Dr. Vahid Rashtchi Advisor: Dr. Ali Azarpeyvand, Dr. Farshad Merrikh Bayat Dissertation title: "*Code acceleration using memristor based analog computations.*"
M.S.	**M.S. in Electronics Engineering** University of Zanjan, 2011. Super Advisor: Dr. Vahid Rashtchi Dissertation title: "Hardware implementation of duffing oscillator array for week signal detection."
B.S.	**B.S. in Telecommunications Engineering** University of Zanjan, 2008. Super Advisor: Dr. Vahid Rashtchi Dissertation title: "Developing a minimum board using ARM microcontrollers."
Diploma	**Diploma in Mathematics & Physics** National Organization for Development of Exceptional Talents, 2004.

Awards & Honors

First class honors in Electronic Engineering Faculty of University of Zanjan for postgraduate studies, 2012.

Granted credit for straight admittance to the Ph.D. program of University of Zanjan, 2012.

Received support from Iran's National Elites Foundation, 2016.

RESEARCH

Interests

Computer architecture, FPGA based systems, GPU Programming, Approximate Computing, Memristor-based Circuits, Embedded Systems

Publications

1. M. Nourazar, V. Rashtchi, A. Azarpeyvand, and F. Merrikh-Bayat, "Code Acceleration Using Memristor-Based Approximate Matrix Multiplier: Application to Convolutional Neural Networks", IEEE Trans. VLSI Syst. 26, 12 (2018), 2684-2695.
2. M. Nourazar, V. Rashtchi, A. Azarpeyvand, and F. Merrikh-Bayat, "Towards Memristor-based Approximate Accelerator: Application to Complex-Valued FIR Filter Bank", Analog Integrated Circuits and Signal Processing, Vol. 96, No. 3, pp. 577-588, Sep 2018.
3. M. Nourazar, V. Rashtchi, A. Azarpeyvand, and F. Merrikh-Bayat, "Memristor-based approximate matrix multiplier", Analog Integrated Circuits and Signal Processing, Vol. 93, No. 2, 363-373, 2017.
4. V. Rashtchi, M. Nourazar, "FPGA Implementation of a Real-Time Weak Signal Detector Using a Duffing Oscillator", Circuits Systems and Signal Processing, Vol. 34, No. 10, 2015.
5. V. Rashtchi, M. Nourazar, "A Multiprocessor Nios II Implementation of Duffing Oscillator Array for Weak Signal Detection", Journal of Circuits, Systems and Computers, Vol. 23, No. 04, 2014.
6. V. Rashtchi, M. Nourazar, "Detecting the State of the Duffing Oscillator by Phase Space Trajectory Autocorrelation", International Journal of Bifurcation and Chaos Vol. 23 Issue 4 (2013) PP. 1-12, 2013.
7. V. Rashtchi, M. Nourazar, R. Aghmashe, "Fault Diagnosis of Broken Bars in Squirrel-Cage Induction Motors Using Duffing Oscillators", International Review of Electrical Engineering-IREE Vol. 7 Issue 3 (2012) PP. 4468-4457, 2012.
8. V. Rashtchi, M. Nourazar, A Study on Duffing Oscillator's Ability on Detecting Disappearance of the Detected Weak Signal", International Review of Modelling and Simulations-IREMOS Vol. 4 Issue 6 (2011) PP. 3395-3401, 2011.

TEACHING & WORK EXPERIENCE

2019-Present
- **Postdoc Researcher, IMEC/UGent**

2007 – 2019
- **Software and Hardware Developer, SadraFan Gostar Company**

2012 – 2018
- **Lecturer in University of Zanjan**
  C/C++ Programming Course
  Digital Design Course
  Microcontrollers Course
  Computer Architecture (Lab.)
  Digital Design (Lab.)

WORK SKILLS

Key Skills
- **Programming: Hardware & Software Languages**
- **Application Development for Windows OS**
  MFC, .Net, WPF, …
- **Linux Driver Development**
  PCI\PCIe device driver development, Embedded linux driver development (Raspberry pi, Beagle bone, …)
- **Real-time Application & Driver Development for Windows OS**
  PCI\PCIe, Ethernet, USB device driver development
- **Parallel Programming of Heterogeneous Systems**
  OpenCL & CUDA
- **PCI/PCIe Interface Development**
  Hardware & software development
- **FPGA based System Development**
  Hardware & software development
- **Embedded System Development**
  Hardware & software development, ARM Microcontrollers, USB & Ethernet devices
- **CAD/CAM Software Development**
  CNC Controller, Rhino3D plugin development
- **Motion Control**
  Stepper & DC motor drive and control
- **AGI Systems Tool Kit (STK)**
  Plugin development
- **Web Design**
  Wordpress, CSS, PHP

Programming Skills

- **Languages**
  C, C++, C#, Python, XAML, Matlab/Octave
- **Technologies, Design Patterns & ...**
  .Net, MFC, WPF, MVVM, Multithreading, CUDA, OpenCL
- **IDEs, Tools & ...**
  Microsoft Visual Studio, Microsoft Expression Blend, Qt, Xamarin, IDA Pro & Ollydbg

Hardware Design Skills

- **Microcontrollers**
  PCB design, ARM microcontrollers, Real-time operating systems (FreeRTOS), Design USB devices (Host\Device)
- **FPGA**
  VHDL, Verilog, FPGA based system design (Ethernet devices, PCI/PCIe interface)
- **IDEs, Tools & ...**
  Altium Designer, IAR Embedded Workbench, ModelSim, Intel Quartus & Qsys, Intel FPGA SDK for OpenCL.

Academic Software Skills

- **Processor simulators**
  Marssx86, SimpleScaler
- **Circuit Simulators**
  Hspice & Ngspice
- **AGI Systems Tool Kit (STK)**
  Plugin Development

General Software Skills

- **Microsoft Office, LaTeX, Rhinoceros, Autodesk Inventor, Adobe Illustrator, Adobe Photoshop**

PROJECTS

Work Projects

- **FPGA Implementation of CCSDS's Protocols**
  - **Description**: FPGA implementation of TM Space Link Protocol and TM Synchronization and Channel Coding Protocol
  - **Technologies:** VHDL
- **Sun Simulator for Satellite Testbed**
  - **Description**: Position controlled sun simulator for in-orbit satellite testbed
  - **Technologies**: Sun simulators, Plugin development for AGI Systems Tool Kit (STK), ARM Microcontroller, Step-motor drive & control
- **Padan – Medical insole designer**
  - **Description:** CAD/CAM Software for Medical Insole Designing
  - **Technologies:** C++ & MFC, Plugin Development for Rhino3D

- **CNC Machine Development**
  - **Description:** Software and hardware design for real-time PC-based 4-axis CNC controller using Windows OS
  - **Technologies:** C++, MFC, Real-time software development, PCI driver development, VHDL, PCB design, Motor drive & control, …
- **Smart Braille Display**
  - **Description**: Developing smart braille display for blind computer users
  - **Technologies**: ARM Cortex-M3 Microcontroller (ATSAM3X), PCB Design, High-speed USB (OTG), Mass storage, Battery charge controller, DC-DC boost driver (Lithium battery to 5V), Bluetooth, Music player, …
- **Kernel Driver Development for Embedded Linux**
  - **Description:** Driver development for beagle bone
  - **Technologies:** Embedded Linux, kernel driver development, beagle-bone
- **CNC Tool Path Simulator**
  - **Description:** Educational 3D tool path simulator for G-Code programmimg
  - **Technologies:** OpenGL, C++, MFC
- **FPGA based Gigabit Ethernet**
  - **Description:** Developing gigabit ethernet as an interface between CNC controller and the PC
  - **Technologies:** VHDL, Verilog, Altera's Cyclone IV FPGA, Gigabit Ethernet (only PHY and MAC), Real-time software development
- **High Voltage DC-DC Boost Converter**
  - **Description:** Lithium battery to 300V DC-DC Boost converter
  - **Technologies:** PCB Design, Boost converter
- **DC Motor PID Controller**
  - **Description:** PID controller for a DC motor (220V, 10A)
  - **Technologies:** PID controller, Atmel AVR Microcontroller, PCB design
- **USB Security Dongle**
  - **Description:** USB security dongle for protecting software
  - **Technologies:** Encryption algorithms, PCB Design, HID USB
- **Micro Water Turbine**
  - **Description:** Micro water turbine power generator for a mountain house

University Projects

- **Course Project: GPU Programming**
  - **Technologies:** Parallel programming, CUDA
- **Course Project: Smart Home Lighting**
  - **Description:** Application of neural networks for controlling home lighting
  - **Technologies:** Neural networks, Fast Artificial Neural Network Library (FANN), Atmel ARM microcontroller

- **Course Project: Measuring Real-Time Performance of Embedded Operating Systems**
  - **Description:** Measuring Real-Time Performance of FreeRTOS and ThreadX Based on Thread-Metric Benchmark Suite Using an ARM Cortex-M3 Architecture
  - **Technologies:** ARM Cortex-M3 Architecture, Real-time operating systems
- **Course Project: 8 Point Radix 2 FFT**
  - **Description:** VHDL implementation of 8 Point Radix 2 FFT
  - **Technologies:** VHDL, Floating point arithmetic, Cyclone II FPGA, FFT
- **Course Project: CIC Decimation Filter**
  - **Description:** VHDL implementation of a CIC Decimation Filter
  - **Technologies:** VHDL
- **Ph.D Final project: Code Acceleration using memristor based analog computing**
  - **Description:** Demonstrates the feasibility of building a memristor-based approximate accelerator to be used in cooperation with general-purpose x86 processors
  - **Technologies:** Memristor, Marssx86, McPAT, Ngspice
- **M.S. Final project: Hardware implementation of Duffing oscillator array for week signal detection**
  - **Technologies:** VHDL, Altera Cyclone IV GX, PCI Express Interface, Nios II processor, Nios II multiprocessor
- **B.S. Final project: Developing a minimum board using ARM microcontroller**
  - **Description:** Developing an educational board using ARM microcontroller
  - **Technologies:** PCB design, Atmel AT91SAM7X ARM microcontroller

REFERENCES

University

- **Vahid Rashtchi, Associated Professor, University of Zanjan, Zanjan, Iran**
  rashtchi@znu.ac.ir
- **Farshad Merrikh-Bayat, Associated Professor, University of Zanjan, Zanjan, Iran**
  f.bayat@znu.ac.ir
- **Ali Azarpeyvand, Assistant Professor, University of Zanjan, Zanjan, Iran**
  azarpeyvand@znu.ac.ir

Work

- **Mahdi Mahdipour, CEO at SadraFan Gostar Co.**
  info@sadrafan.com, m_mahdipour@yahoo.com

CONTACT INFO

Home

- **Address**
  No. 6128, 5th Sohravardi St., Sohravardi Av., Zanjan, Iran. PO Box: 45157-86569
- **E-mail**
  mohsen.nourazar@gmail.com
- **Phone**
  (98)24-33742564
- **Mobile**
  (98)912-742-3318
  (32)456-12-9395

University

- **Address**
  Department of Telecommunications and information processing, Faculty of Engineering and Architecture, Ghent University, Sint-Pietersnieuwstraat 41, 9000 Gent
- **E-mail**
  mohsen.nourazar@ugent.be
  mohsen.nourazar@imec.be
- **Phone**
  (32)9-264-95-30